

Carefree Models

Publieke samenvatting / Public summary

Aanleiding

Despite ongoing efforts for industry-wide standards for digitization, a shared and mutually trusted framework for the management and upkeep of industrial digital prediction infrastructures is still unavailable. Digital process models require intensive care: they operate in turbulent environments with sensor drifts, sensor maintenance, change in operating conditions, (seasonal) raw materials variation and mechanical aging. Manual, responsive maintenance, such as periodic and on-request model recalibration and updating, is very resource-intensive and often too late to retain optimal model performance. Process models also require adaptation to newly anticipated conditions, e.g. new product recipes or new data sources, which is likewise resource-challenging and may significantly increase model complexity and global performance. Thirdly, model transferability is starting to get more industrial attention because it enables the use of existing models across different process (and analytical) instruments for new predictions without current substantial efforts to recalibrating or developing new models for new process lines or sites and therewith increase the possible impact.

Doelstelling

Carefree Models puts process model maintenance, adaptation and transfer into an integrated, automated, and predictive framework that quantifies and reduces the overall resources required to sustain process predictivity and resulting resilience. This will greatly increase the power of Industry4.0 as a resource-efficient

Projectinformatie / Project information

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Algemene informatie / General information

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breakthrough approach to create process economy, resilience, and sustainability. Carefree models will significantly reduce the intensive efforts needed in process industry to upkeep the predictive power in process data that is needed to take fact-based operational decisions. The proposed generic Carefree Model framework will reduce and visualise this resource-need, resulting in a more valuable and tangible value proposition of Industry4.0, directly benefitting superior product quality, efficient cost reduction and minimized environmental impact in a broad range of industrial settings.

Korte omschrijving

The project consortium will focus on:

- Creating a broad portfolio of industrial case studies with benchmark process models that benefit from systematic updating capacity, require adaptive qualities and/or transferability to new processes.
- Developing new methods to automatically maintain process models for optimal predictive performance, adapt them to systematic change and transfer them to new processes in a cost-effective and valuable way
- Developing a framework to onboard, deploy, monitor, and value Carefree Models at industrial end-users, substantiated in the selected cases and sharing best practices within a broad process industry community

Resultaat

The proposed comprehensive innovative solution of this project is to provide industry organizations with the novel methods, guidance, and knowledge necessary for enabling and embracing carefree models, leading to increased efficiency, productivity, sustainability and reduced waste. Project results will include:

- Maintenance, adaptation, and transfer of new and existing predictive models, implemented at industrial environment as valuable case-studies for the Carefree Model Framework in Food, Chemical and Circular industry.
- Innovative digital tools for better model development, monitoring, and maintenance in an integrated framework, stand-alone and/or implemented in existing software platforms.
- Guidance to the broader process Industry via

dissemination with best practices on the deployment, required resources and obtained process value for the CFM Framework.

De data in deze applicatie is afkomstig van de Rijksdienst voor Ondernemend Nederland (RVO) en wordt in samenwerking met de Topsector Energie ontsloten.

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